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**Report Highlights:**

Genetic modification continues to be a sensitive subject that evokes strong emotional responses in New Zealand. Genetically modified plants and animals are not commercially grown in New Zealand at present. Negative public sentiment and prohibitive regulatory requirements make this unlikely to change in the near future. Despite this, a number of contained research trials involving genetically modified organisms are occurring and food products with genetically modified content are legally offered for sale and consumption, following prior approval. New Zealand continues to play an important role internationally in securing international science-based trade rules for agricultural biotechnology products.

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## SECTION I. EXECUTIVE SUMMARY

The term 'biotechnology' tends to be used very broadly in New Zealand to mean technology based on applying biological processes. Genetic modification (GM) is one of these technologies. While attitudes in New Zealand toward agricultural biotechnology are generally positive, the issue of GM continues to be a sensitive subject that evokes strong emotional responses.

At present, there is a limited application of GM-related biotechnology in New Zealand's agricultural industry. When Prime Minister Helen Clark's Labour Government first took office in late 1999, there was concern that it would succumb to pressure from anti-GM groups such as the Greens and ban the possible development or use of biotechnology in New Zealand. This was reinforced by its initial actions, including the imposition of a voluntary moratorium on genetically modified organism (GMO) releases. A year-long Royal Commission inquiry allowed a rational public debate on the issue and the Commission's report provided the general endorsement that the Government needed to move forward. The New Organisms and Other Matters Bill (2003) ended the GMO moratorium and established new regulations for their introduction. The Government has made it clear that the promotion of biotechnology is a key part of New Zealand's plan to move away from an economy reliant on commodities toward one more based on value-added, knowledge-intensive products. This is presently being achieved without commercial production of GM products.

GM plants and animals are not commercially grown in New Zealand. However, a number of contained research trials involving genetically modified organisms are occurring and food products with GM content are legally offered for sale and consumption. To date, no application has been made for Government approval for a commercial release of a GM crop or the sale of fresh/whole GM foods. This appears unlikely to change during the next couple of years, as the first applicant will face a time and cost intensive regulatory process and will come under intensive public scrutiny and pressure from a number of different groups. It is thought that applications after the first successful one will be much easier as issues related to GM in general will have been dealt with.

While many New Zealand farmers support the commercialization of appropriate GM crop varieties in New Zealand, the sector is approaching the issue cautiously. Many agricultural industry participants are concerned as to what impact the commercial production of GM crops could have on New Zealand's 'clean and green' image in overseas markets.

New Zealand has had only three applications for GM trials since 2001. The most recent was in May 2007, when the Environmental Risk Management Authority (ERMA) approved an application by the New Zealand Institute for Crop and Food Research to field test genetically modified (GM) Brassicas in New Zealand (see NZ7017). The Brassicas are to be modified for resistance to caterpillar pests, with the genes derived from the bacterium *Bacillus thuringensis*. The trials will be undertaken on a 0.4 hectare plot in the Lincoln area (Canterbury region of New Zealand's South Island) over a 10 year period. For more information see the ERMA press release: <http://www.ermanz.govt.nz/news-events/archives/media-releases/2007/mr-20070528.html>. ERMA is expecting another two or three applications in the next 12 months. The launch of legal action by an environmental group in June 2007 in New

Zealand's High Court against ERMA's decision to allow the Brassica GM trial is an example of the pressure against groups attempting to proceed with GM trials.

Although New Zealand does not produce or export agricultural biotech products, it continues to play an important role internationally in securing science-based trade rules for such products. For example, it joined, as a third party, the WTO dispute case taken by the U.S. and others against the EU's moratorium on approving agricultural biotech products. As a party to the Cartagena Biosafety Protocol, it has worked to ensure that measures to protect the environment are not unfairly trade disruptive for biotech products.

New Zealand routinely imports modest quantities of planting seeds for forage grass, grain crops, and vegetables. All seeds to be imported into New Zealand are required to be certified as GM free before they can be legally imported into New Zealand for commercial use, as there are currently no approvals to commercially grow any GM crops. Imports of GM planting seeds have, to date, been limited to research activity. Seeds imported for processing do not have to be tested for unintentional GM presence. MAF accredited laboratories overseas test commercial imports of seeds for sowing that claim to be free of GM seeds, before being allowed entry into New Zealand. Only seeds of crops that have commercially produced GM varieties are tested for unintentional GM presence.

## **SECTION II. BIOTECHNOLOGY TRADE AND PRODUCTION**

Biotechnology is seen as a critical area to New Zealand's ongoing efforts to maintain its competitiveness in the international trade of agricultural products. Currently 40 percent of all biotechnology activities in New Zealand are related to agriculture. Despite the importance of biotechnology to New Zealand's agriculture, the issue of genetic modification doesn't have widespread public acceptance. Although there are several ongoing contained trials, there are no commercial plantings of GM crops in New Zealand. This is not expected to change in the next couple of years. It is legal, however, to sell food with GM content in New Zealand. Approval for food with GM content is granted on a case-by-case basis.

The biotechnology survey, undertaken by the Government agency Statistics New Zealand<sup>1</sup>, estimated biotechnology expenditures by companies and research organizations in New Zealand for the 2005 financial year at U.S.\$ 364 (NZ\$ 517<sup>2</sup>) million, excluding the University sector. Biotechnology related income was valued at U.S.\$ 476 (NZ\$ 676 million), excluding the University sector (these figures include all biotechnology, including agricultural)<sup>3</sup>. This survey was not undertaken for the 2006 year.

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<sup>1</sup> <http://www.stats.govt.nz>

<sup>2</sup> 2005 NZ\$ 1 = U.S.\$ 0.70

<sup>3</sup> <http://www.stats.govt.nz/products-and-services/hot-off-the-press/biotechnology-survey/biotechnology-survey-2005-hotp.htm>

### SECTION III. BIOTECHNOLOGY POLICY

The New Zealand Government is investing in research for the biotechnology sector as a means to stimulate economic growth and enhance New Zealand's international competitiveness. The Government's framework for its biotech investment is outlined in its Biotechnology Strategy<sup>4</sup>. Biotechnology, which includes genetic modification, is identified by the Government as one of three primary areas for direct Government involvement. This supports the New Zealand Government's Growth and Innovation Framework, which aims to return New Zealand to the top half of the OECD countries, as measured by per capita GDP rankings. The New Zealand Government's policy on GM is that New Zealand should proceed with caution while at the same time ensure that opportunities are preserved. This is in line with the overall conclusion of the Royal Commission on Genetic Modification. Despite this, GM technology is still limited in New Zealand.

There are currently no GM crops grown in New Zealand on a commercial basis, although there are a small number of GM research trials being conducted<sup>5</sup>. Many of the GM plant species imported for research are sourced from the United States. Despite the ongoing research of genetically modified organisms (GMOs) in New Zealand, current GM research is not conducted with the aim of growing GMOs commercially in New Zealand in the near future. This is due to onerous regulations discouraging perspective companies from applying for a commercial release of GM organisms, resistance to GM from the general public, and the limited number of GM products that would be beneficial to New Zealand. Many in the industry believe that the first commercial application will be for a GM pharmaceutical product, rather than a GM organism that benefits farmers.

Regardless of this, there are three main benefits of maintaining GM research:

- New Zealand maintains its research capabilities in GM to ensure that it does not lag behind once GMOs do begin to be commercialized in New Zealand
- The research helps develop techniques that are useful in other areas of biotechnology, such as gene markers
- Some of this technology is sold to overseas interests, who often invest in New Zealand to perform this research, providing a short-term source of income

In contrast, New Zealand is investing heavily in non-GM areas of biotechnology. Research is performed by a combination of Crown Research Institutes (Government research organizations), universities and the private sector. New Zealand's principal focus is in the areas of:

- Large animal biology (particularly sheep and dairy cows)
- Plant species important to New Zealand, such as forage grasses to improve the performance of grazing animals
- The development of new products derived from New Zealand's agriculture, such as understanding the raw constituents of milk, its structure and functionality.

These are likely to be key areas for future GM research in New Zealand. The website for the Ministry of Research, Science, and Technology (MoRST) describes New Zealand's 'research strengths'<sup>6</sup>.

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<sup>4</sup> <http://www.morst.govt.nz/current-work/biotechnology/>

<sup>5</sup> See the ERMA website for more information, including applications for GM trials: <http://www.ermanz.govt.nz>

<sup>6</sup> <http://www.morst.govt.nz/current-work/biotechnology/NZ-strengths/>

MoRST is charged with developing New Zealand's research and innovation policies. Although it establishes research allocation guidelines and policies, it contracts other agencies to handle the allocation process. The main distributor of Government funding in New Zealand is the Foundation for Research, Science and Technology<sup>7</sup> (FRST). FRST is a Crown entity charged with investing in innovation and fostering the creation of new knowledge.

The New Zealand Government also aids the commercial side of the biotechnology industry. The main organization responsible for this is New Zealand Trade and Enterprise<sup>8</sup> (NZTE). NZTE performs three main functions in conjunction with the biotechnology sector:

- Work with individual businesses to build their commercial capacity
- Improve the business environment to foster enterprise and growth
- Help build international linkages.

The focus when building international linkages mainly relates to international research collaboration and sourcing finance. An example of improving the business environment is NZTE's involvement with the creation of NZBio<sup>9</sup>. NZBio is an industry body for the biotechnology sector, primarily tasked with accelerating growth of the sector by creating opportunities and removing barriers. NZBio achieves this by working with both Government and industry.

#### **NEW ZEALAND REGULATION OF GM**

Two statutory regulatory bodies manage the use of GMOs and foods with GM content under New Zealand's regulatory framework. The Environmental Risk Management Authority<sup>10</sup> (ERMA) regulates new organisms, which includes applications to grow GMOs in New Zealand. Food Standards Australia New Zealand<sup>11</sup> (FSANZ) creates food policy, such as labeling requirements for foods with GM content, and is responsible for granting the approval required to sell food products with GM content in New Zealand, following an assessment of the product's safety. New GMOs and food with GM content are assessed on a case-by-case basis before they can be used or sold in New Zealand. Another government department, the New Zealand Food Safety Authority<sup>12</sup> (NZFSA), is responsible for the implementation and enforcement of food standards developed by FSANZ, in order to meet its obligations of ensuring food safety for New Zealand consumers.

Rules governing the introduction of GMOs into New Zealand are outlined in the Hazardous Substances and New Organisms (HSNO) Act<sup>13</sup> (1996). The HSNO Act is administered by the Ministry for the Environment but implemented by ERMA, which was established as an independent body under the Act.

In New Zealand, ERMA must approve the importation, development, field testing, conditional release or full release of any GM organisms. If approval is given for development in containment, or for importation into containment, further approval must be given before the organisms can be field tested, conditionally released or fully

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<sup>7</sup> <http://www.frst.govt.nz/>

<sup>8</sup> <http://www.nzte.govt.nz/>

<sup>9</sup> <http://www.nzbio.org.nz>

<sup>10</sup> <http://www.ermanz.govt.nz/>

<sup>11</sup> <http://www.foodstandards.govt.nz/>

<sup>12</sup> <http://www.nzfsa.govt.nz/>

<sup>13</sup> <http://www.legislation.govt.nz>

released. Approval is only given if, in the opinion of ERMA, the benefits of the GMO outweigh the risks. There are different decision criteria for low-risk GMOs that are developed in laboratories or are medicines.

Under the HSNO Act, when considering an application to import, develop, field test, or release a genetically modified organism, ERMA must take into account:

- The sustainability of all native and valued flora and fauna;
- The intrinsic value of ecosystems;
- Public health;
- The relationship of Maori culture and traditions with their ancestral land;
- The economic and related benefits and costs to be derived from the organism; and,
- New Zealand's international obligations.

The HSNO Act was amended by the New Organisms and Other Matters (NOOM) Bill in October 2003. The NOOM Bill came into effect to coincide with the expiry of New Zealand's voluntary two-year moratorium on the introduction of GMOs. The NOOM Bill set new regulations for the introduction of GMOs including the addition of a new approval category called "conditional release". New Zealand's commercial release moratorium had precluded applications for the commercial planting of GM crops, the commercial importation of GM seeds, the release into the environment of GM animals and, to a lesser extent, human and veterinary medicines containing GMOs. It did not, however, affect the use and sale of processed GM foods and ingredients. The moratorium gave the Government time to assess environmental implications and the implementation of a legislative framework for biotechnology. Further information regarding the HSNO Act is available on the ERMA website.

Following the introduction of the NOOM Bill, some industry participants maintained that the cost associated with gaining new organism approval and the regulations that had to be met were prohibitive. This reduced the number of applications. Prior to the introduction of HSNO there were 50 successful applications. Following the introduction of HSNO there have been only 17 successful applications. ERMA addressed industry cost concerns in 2004, standardizing and significantly reducing application costs. It has since received some positive feedback regarding the current regulations and their associated costs. However, only three of the 17 successful applications under HSNO have occurred following the Royal Commission on GM in 2001. There are other factors besides HSNO that may account for the significant reduction in applications.

New Zealand's updated GM-related regulations can appear daunting to foreign investors, and industry participants have mixed views about them. Some in the industry argue that, although complex, New Zealand has a very robust and consistent regulatory system in place, which is not burdensome to work through once understood. This appears to be true for field trials, but the burdensome nature of the regulations have meant that to date there have been no applications to grow a commercial GM crop, and none are expected in the next couple of years. This is due to the time and cost that will be involved as a result of the required wide ranging and detailed requirements and extensive public consultations. This will continue until the first successful application of a commercial GM crop, as the majority of the hurdles that need to be overcome relate to the growing of GM crops in general, rather than specific GMO attributes (see 'Criteria Considered by ERMA for Commercial GMO Releases' below).

Of the approval categories, there are two of relevance to those wishing to grow GMOs on a commercial basis in New Zealand. One is 'Release of a New Organism'. If approval is granted under this category, a new organism would be allowed uncontrolled use in the environment. Such approval for a GMO is extremely unlikely under New Zealand's current regulatory environment.

The other category is the 'Conditional Release of a New Organism', which was added by the NOOM Bill. This category includes a broad range of circumstances, from a contained scientific trial through to a full commercial release. Under a conditional release, ERMA is able to specify restrictions on the GMO. These control measures allow ERMA to impose conditions to prevent, minimize or manage any risks identified during the risk assessment. Examples include where the crop or animal is located, conditions under which it could be grown and used, and what type of monitoring needs to be implemented. Section 38D of the HSNO Act outlines some of the controls that may be placed on an application. To date ERMA has not received an indication that applications to commercially grow GMOs in New Zealand in the near future are likely. Further information can be found on the ERMA website<sup>14</sup>. This includes the application process for seven categories of approval for the importation and/or development of GMOs and a schedule of fees. Additional resources are available elsewhere on the site, including reports regarding some of the contained trials that have been approved<sup>15</sup>.

### **Considerations for GMO Trials**

Currently only trials (which include growing GMOs in a laboratory, right through to a contained field trial) are being undertaken with GMOs in New Zealand. Under HSNO, the category of 'Field test a new organism in containment' is suitable for researchers wishing to grow a GM crop for research purposes. If approved, containment requirements are outlined in the approval to manage any risks to the environment or human health and safety. These controls can include factors such as the length of time the approval is valid for, the size of the trial, requirements for removal of any heritable material at the end of a GMO trial and reporting requirements during the trial.

Approvals for trials of a GMO are restricted to the applying organization only, requiring other organizations to apply separately if they wish to run trials containing the same GMO. However, organisms may be approved for use by people/organizations other than the original applicant if the use of an approved organism will be under exactly the same circumstances as the original approval. Unless specified, there is no time limit on applications. As a result, many applications for trials approved by ERMA in 1998 and 1999 remain valid and are still in use by some applicants.

The small number of field trials of GMOs in New Zealand shows that although onerous, it is possible to meet the regulatory requirements. The conditional release of a GMO on a commercial basis is a completely different matter, with no applications to date and none expected in the next couple of years.

### **Considerations for a Commercial GMO Release**

Regulations surrounding a conditional (commercial) release are far more stringent and burdensome than those of a field trial. In spite of ERMA's application costs for a

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<sup>14</sup> <http://www.ermanz.govt.nz/no/index.asp>

<sup>15</sup> <http://www.ermanz.govt.nz/search/index.html>, see Appendix I for a summary.

conditional release now being considered by many to be low, the cost and time involved in public consultations is extremely high. Although New Zealand's first applicant will be able to restrict the approval to the applying organization, the prohibitive cost of being the first (and significantly lower costs of subsequent applications) discourage organizations from being the first applicant. As such, many in the industry feel that the first application will be a joint venture between a number of companies with a focus on gaining regulatory approval for an initial GMO, opening the door for future conditional release applications.

Under the current system, applicants must identify the potential adverse and beneficial (risks, costs and benefits) effects on the environment, human health and safety, the Maori culture and traditions, the market economy and society and community. Applicants must also address ethical and spiritual considerations. Providing evidence on the potential impacts of a GMO conditional release will not only be expensive and time-consuming, but will also allow parties against a GM release to emphasize the negative impact on them. There are a number of exporting companies selling both organic and conventionally produced products that will argue, for instance, that their business is built on the 'clean, green, GM-free image of New Zealand'. They will state that once GM crops are grown in New Zealand on a commercial scale, their brand and that of New Zealand would be damaged. It will be difficult for an applying organization to adequately refute such claims.

Applications to ERMA seeking Government approval for the release of a GMO into the environment must describe in detail all scientific evidence available regarding the nature of the organism. If conditional release were requested at a farm-scale, data in the submission regarding fully contained field trials would be included in the approval request packet. Included in the application should be evidence of:

- The anticipated economic costs and benefits if approval is granted;
- The anticipated impact of the organism on the environment;
- Data related to human health and potential impact on food safety if it is a food crop; and,
- Information related to Maori interests and the results of consultations with Maori.

The NOOM Bill adds cultural, spiritual, and ethical considerations to the list of criteria against which the Minister for the Environment may initiate a "ministerial call-in" which allows the Minister rather than ERMA to make the final decision on approval of an application to release a GMO into the environment.

The approval for a conditional release (for example, to commercially grow a GMO crop) could either be restricted to one user or left open, allowing anyone the opportunity to grow the crop in future. Conditional release approvals expire either on the close of the date on which the last control that the approval relates to, or five years after the date on which the approval is granted.

The New Zealand Government has not set regulatory guidelines governing co-existence of GM and non-GM crops. Instead, ERMA will set control measures related to coexistence for each individual approval of a conditional release of a GM crop. Controls would include, but not be limited to, specifying planting distances and buffer zones. The New Zealand Government has publicly expressed the belief that New Zealand can allow organic crops, conventional crops, and GM plants and animals to co-exist without curtailing anyone's rights. The Minister for the Environment suggested in 2003, however, that it "might be years before any significant release of

GMOs occurs in New Zealand and that GM fresh food is not likely to be on sale in New Zealand for at least five years." It now appears that this process will take much longer than that.

The HSNO Act, as amended by the NOOM Bill, includes penalties for those who fail to maintain compliance with the introduction of new organisms. Breaches of the Act and its regulations are subject to a schedule of fines. Penalties can be imposed of up to NZ\$ 500,000 per individual or NZ\$ 10 million per company. If it is determined that a contravention of the regulations, i.e. the terms set for the conditional release of the GMO by ERMA, has occurred in the course of producing a commercial gain, the non-compliant company can be subjected to a fine equivalent to three times the estimated gain or 10 percent of the company's annual revenue.

### **Cartagena (Biosafety) Protocol**

The Cartagena Protocol on Biosafety entered into force for New Zealand on May 2005, following New Zealand's ratification of the agreement in February 2005. The protocol regulates the trade of living modified organisms. New Zealand was already assessing genetically modified organisms before importation into New Zealand on a case-by-case basis and states that it ratified the protocol to be a 'good international citizen'. Several industries, however, such as the dairy sector, are concerned that the EU or other countries might use the "precautionary principle" to restrict trade.

New Zealand has a similar stance on issues related to the Biosafety Protocol as the United States. Both countries are concerned about documentation requirements, liability and compliance arrangements, and potential conflicts with other international obligations. As a result, New Zealand has become a strong ally of the United States at Biosafety Protocol meetings. New Zealand was critical in helping to shape more balanced decisions at the meeting in May 2005. New Zealand's Green political party has been very critical of New Zealand's role in the talks in Brazil during March 2006, stating that New Zealand was preventing agreement on labeling requirements under the protocol. New Zealand disagrees with the proposed labeling requirements, as New Zealand is arguing for the meaningful and informative labeling of GM organisms.

### **Certification of Imports of non-GM Planting Seeds**

New Zealand requires that all imports of non-GM planting seeds, which have commercially grown GM varieties available, be tested and certified as free of any GM seeds. This includes corn (maize), canola (rapeseed) and soybean seeds. New Zealand has a zero tolerance policy in regard to the presence of GM varieties - if any GM seed is detected, regardless of the level of contamination, that shipment will be rejected.

The most recent example of the detection of GM seed in a shipment certified as containing conventional seed only was in December 2006 (see NZ6022 and NZ 6025 for further information). MAF reported that 3.22 of the 4.42 tons of sweet corn seeds in the shipment were confirmed as having some GM seed present. The seeds with GM presence and any resulting crops were destroyed. The remainder of the seeds were tested three times for the presence of GM seeds with negative results, before permission was given to harvest the resulting crop.

### **GM FOOD APPROVAL**

Foods with GMO content can be offered for sale and consumption in New Zealand after being assessed and approved by FSANZ. This is the result of a mandatory standard for foods produced using modern biotechnology, which came into effect in

1999. GM food (including assessment, approvals and labeling) is regulated under the joint Australia and New Zealand Food Standards Code. The Code was established under a bilateral Treaty, 'Agreement between the Government of New Zealand and the Government of Australia Establishing a System for the Development of Joint Food Standards' (1995, amended 2002). This is provided for in legislation under the Food Act 1981, which prohibits the sale of food produced using gene technology, unless the food has been assessed by FSANZ and listed in the food code standard.

Approval for food with GM content is granted on a case-by-case basis. The approval process is transparent and open for public comment. The technical assessment undertaken is consistent with the Codex Alimentarius Commission's Principles for the Risk Analysis of Foods Derived from Modern Biotechnology and subordinate safety assessment guidelines.

Information for those wishing to apply to FSANZ to introduce a new food produced using gene technology, as provided for in the Australia New Zealand Food Standards Code, is available on the FSANZ website<sup>16</sup>. As of March 2007, FSANZ has received 39 applications for safety assessments of bioengineered foods. Of these, 32 applications have been approved, five applications are being processed, and two requests have been withdrawn. A summary of FSANZ review results for applications of GM foods for human consumption, as well as its general policies for GM food, are available on the FSANZ website<sup>17</sup>.

### **Labeling of Food with GMO Content**

Mandatory New Zealand labeling requirements for foods produced using gene technology became effective in December 2001. They are among the world's most stringent. Biotechnology labeling is required if a food in its final form contains detectable DNA or protein resulting from the application of gene technology, with a few exceptions. The New Zealand Government believes that its labeling requirements provide consumers the information necessary to decide whether or not to consume foods with GMO content and are not based on food safety concerns.

Meeting the requirements of New Zealand's GM food labeling regulations places a burden on manufacturers, packers, importers, and retailers to take reasonable steps to determine if the food is genetically modified or has a GM ingredient and to ascertain if the GM food is approved. The importer usually has the primary responsibility for ensuring the accuracy of the label and compliance with New Zealand's GM food labeling requirements. Wholesalers and retailers usually demand GM-free declarations from their supplier/importer, which passes liability in the event of GM labeling non-compliance back to the importer. New Zealand food legislation requires businesses to exercise due diligence in complying with food standards. Meeting those obligations is usually interpreted to require a paper or audit trail similar to a quality assurance system.

The labeling of ingredients required of all food products for sale in New Zealand is covered by Standard 1.2.4<sup>18</sup> of the Australia New Zealand Food Standards Code. Unless specifically exempted, all packaged food must include a statement or list of ingredients and compound ingredients used in the manufacture of that food on the label. The labeling of food produced using gene technology is explained in Standard

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<sup>16</sup> <http://www.foodstandards.gov.au/foodmatters/gmfoods/index.cfm>

<sup>17</sup> <http://www.foodstandards.gov.au/foodmatters/gmfoods/index.cfm>

<sup>18</sup> [http://www.foodstandards.gov.au/srcfiles/FSC\\_Amend\\_Standard\\_1\\_2\\_4\\_Labeling\\_of\\_Ingred\\_v91.pdf](http://www.foodstandards.gov.au/srcfiles/FSC_Amend_Standard_1_2_4_Labeling_of_Ingred_v91.pdf)

1.5.2<sup>19</sup> and lists those products that use gene technology but are exempt. There is a one percent threshold for the unintentional presence of a GMO in non-GM food. Additionally, animals that have been fed GM feed are not regarded as GM food.

### **GM-Free Labeling**

Negative content labeling such as “GM Free” is not addressed as part of the labeling standard.

### **Compliance**

The NZFSA does not inspect individual food import shipments for compliance with GM-food labeling requirements. Periodic compliance audits conducted by NZFSA usually start by selecting a number of items from retail shelves and working back to the local manufacturer or the importer of record. For imported food, this largely consists of a review of importer compliance with their responsibility to adequately document the GM content of their food imports based upon information obtained from overseas exporters/manufacturers and that food product labels indicate GM content if necessary.

A retail food audit conducted by NZFSA in September 2004 reportedly found 17 of the 117 processed products evaluated to have genetically modified (GM) content that exceeded a one percent threshold. These included two products that had been labeled as GM-free, which were referred to the New Zealand Commerce Commission for action under the Fair Trading Act 1986. Additional NZFSA measures were taken to ensure that companies involved with those products whose labels failed to provide information on their GM content, but did not have false GM-free declarations, meet future labeling compliance standards.

### **GM ANIMAL FEED REGULATIONS**

Regulatory approval is not required to feed GM feed to animals. This is covered by the Agricultural Compounds and Veterinary Medicines (ACVM) regulations 2001, which are issued under the ACVM Act (1997). The ACVM regulations state that materials fed to animals should be safe and not cause harm to the animal. A distinction between GM and non-GM feed is not defined. When imported, animal feed gains entry to New Zealand under its general IHS, with no distinction made between GM and non-GM animal feed.

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<sup>19</sup> [http://www.foodstandards.gov.au/srcfiles/FSC\\_1\\_5\\_2\\_GM\\_v77.pdf](http://www.foodstandards.gov.au/srcfiles/FSC_1_5_2_GM_v77.pdf)

## **SECTION IV. MARKETING ISSUES**

Biotechnology continues to be a politically sensitive subject in New Zealand that evokes strong opposition from the Green Party as well as other influential organizations. These groups seek to prevent commercial releases of genetically modified organisms into the environment as well as to impose restrictions against consumption of foods with GM content.

New Zealand consumers are usually cautious when purchasing GM foods and have tended to avoid such foods when the GM debate was visible in recent years. Such attitudes may be weakening. Most New Zealanders place little effort in sourcing non-GM products and are unlikely to check the ingredients list of processed food products for the presence of GMOs. However, any GM food that receives negative media attention from anti-GM groups is likely to suffer a substantial, but temporary, drop in sales. Despite this, some research conducted in New Zealand has found that New Zealand consumers will still purchase foods when they are aware that it contains GM product. For example, a research paper published in *Nature Biotechnology* in May 2007<sup>20</sup> found that a large number of consumers in New Zealand were willing to purchase a GM variety of fruit over conventional or organic fruit, if there was a price advantage and consumer benefit (in this instance it was 'spray free').

Most New Zealand farmers support the commercialization of appropriate GM varieties of crops in New Zealand. They are, however, cautious in their approach to potential application. Before making planting decisions, most will want assurances that there will be marketing opportunities for GM crops and that existing and potential markets for their non-GM products will not be disadvantaged by growing GM crops.

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<sup>20</sup> Knight, J.G., Mather, D.W., Holdsworth, D.K., & Ermen, D.F. (2007). Acceptance of GM food – an experiment in six countries. *Nature Biotechnology*, 25(5), 507-508.

## **SECTION V. OUTREACH ACTIVITIES**

In the past, outreach programs organized by FAS in New Zealand have mainly involved the use of recognized U.S. speakers promoting the benefits of biotechnology to New Zealand. The most recent was the Embassy supported visit of James Maryanski of the FDA in March 2005. He was a guest speaker at the first annual biotechnology conference organized by NZBIO. He shared FDA's experiences in addressing safety and regulatory issues related to GM foods in the United States. Dr. Maryanski met appropriate Government officials and presented to the public in Wellington.

A year earlier, FAS and the Embassy's public affairs office organized the visit of Gregory Conko and Richard Fawcett to New Zealand. Their main aim in New Zealand was to promote the uptake of biotechnology in New Zealand by outlining its benefits and pointing out the flaws in the statements of detractors. They discussed issues such as biotechnology's impact on farming, the environment and consumer safety. They spoke at several venues, ranging from presentations to the public and press to meetings with Government officials and industry groups.

In February 2003, FAS and the Embassy's public affairs section organized the visit of Patrick Byrne and Martina Newell-McGloughlin to New Zealand. They addressed the question of coexistence and the promise of the technology. They spoke to a variety of audiences, from the public to Government officials and other scientists.

## **APPENDIX I. REFERENCE MATERIAL**

The Environmental Risk Management Authority – regulator under the HSNO Act  
[www.ermanz.govt.nz](http://www.ermanz.govt.nz)

The Ministry for the Environment – administers the HSNO Act  
[www.mfe.govt.nz](http://www.mfe.govt.nz)

Food Standards Australia New Zealand – developed the safety and labeling standards, and undertakes any safety assessments, for GM foods  
[www.foodstandards.govt.nz](http://www.foodstandards.govt.nz)

New Zealand Food Safety Authority – responsible for food safety and suitability standards/implementation/compliance/enforcement in New Zealand  
[www.nzfsa.govt.nz](http://www.nzfsa.govt.nz)

Biosecurity New Zealand – part of the Ministry of Agriculture and Forestry responsible for imports into New Zealand  
[www.biosecurity.govt.nz](http://www.biosecurity.govt.nz)

Ministry of Research, Science and Technology – implements the Government's research strategy and regulations  
<http://www.morst.govt.nz/current-work/biotechnology/>

Foundation of Research, Science and Technology – contracted by MoRST to allocate the majority of Government funding for research  
[www.frst.govt.nz](http://www.frst.govt.nz)

Searchable database listing research projects that FRST has contributed funding to  
<http://www.frst.govt.nz/database/reports06/index.cfm>

NZbio – an incorporated society tasked with assisting the growth of New Zealand's biotech sector  
[www.nzbio.org.nz](http://www.nzbio.org.nz)

New Zealand Trade and Enterprise – assists and promotes New Zealand businesses  
[www.nzte.govt.nz](http://www.nzte.govt.nz)

Biotechnology learning hub  
<http://www.biotechlearn.org.nz/>

New Zealand's Bioethics Council  
<http://www.bioethics.org.nz/>

A list of New Zealand's Crown Research Institutes  
<http://www.ccmaw.govt.nz/crown-research-institutes.html>

New Zealand's Biotechnology Strategy  
<http://www.morst.govt.nz/publications/a-z/n/nz-biotechnology-strategy/>

Full Text of the Hazardous Substances and New Organisms Act (1996)  
<http://www.legislation.govt.nz/>  
(Select under 'Statutes')

## APPENDIX II. PAST GM FIELD TRIAL APPLICATIONS.

The table below lists the applications to field test a GM organism lodged with ERMA under the HSNO act since 1998. For more information on these applications, go to <http://www.ermanz.govt.nz/search/registers.html>.

Code	Applicant	Description	Purpose	Status
GMF98009	AgResearch	GM Cattle	To field test, in Waikato, cattle genetically modified with cattle casein genes or the human myelin basic protein gene, or deletion of the cattle lactoglobulin gene. Milk may have enhanced nutritive value or be valuable as a drug for multiple sclerosis.	Still active
GMF99001	Scion	GM Pine Trees	To field test, in the Bay of Plenty (Rotorua), over a period of 20 years, <i>Pinus radiata</i> plants with genetic modifications to the genes controlling reproductive development. The total duration of this project including a post-trial monitoring phase is 22 years.	Still Active
GMF99005	Scion	GM Pine Trees	To field test, in the Bay of Plenty (Rotorua), over a period of 9 years, <i>Pinus radiata</i> and <i>Picea abies</i> plants genetically engineered for herbicide resistance. The total duration of this project is 11 years.	Still Active
GMF03001	Crop and Food Research	GM Onions	To field test onions modified for tolerance to the herbicide glyphosate, and to evaluate their environmental impact; herbicide tolerance; agronomic performance; development as cultivars and equivalency to non-genetically modified onions.	Still Active
GMF06001	Crop and Food Research	GM Vegetable and Forage Brassicas	To assess the agronomic performance, in the Lincoln region, over 10 years of vegetable and forage Brassicas, specifically cabbage, broccoli, cauliflower and kale, modified for resistance (modified to contain genes derived from <i>Bacillus thuringiensis</i> ), to caterpillar pests like cabbage white butterfly and diamondback moth.	Still Active
GMD02028	AgResearch	GM Cattle	To develop transgenic cattle that can express functional therapeutic foreign proteins in their milk and to develop transgenic cattle to study gene function and genetic performance.	Still Active
GMF98002	Crop and Food Research	GM Petunia	To assess the field performance of vegetative plants - <i>Petunia</i> genetically modified for altered plant form or pigmentation.	Completed
GMF98004	Betaseed Inc.	GM Sugar Beet	To evaluate agronomically important characteristics of herbicide tolerant (phosphinothricin resistant) sugar beet ( <i>Beta vulgaris vulgaris</i> ).	Completed

GMF98011	Carter Holt Harvey	GM Trees	To field test, in Waikato, pre-reproductive Pinus radiata, in order to study factors influencing gene expression and to assess the influence of genetic modifications, involving the insertion of marker genes, on the growth and morphology of trees.	Completed
GMF98007	Crop and Food Research	GM Potatoes	To field test, in Canterbury over 5 years, potato cultivars genetically modified for increased resistance to bacterial soft rots, to evaluate resistance and yield performance of individual lines.	Completed
GMF98008	Crop and Food Research	GM Potatoes	To field test, in Canterbury over 5 years, potato cultivars genetically modified for increased resistance to potato tuber moth, to evaluate resistance and yield performance of individual lines.	Completed
GMF98001	PPL Therapeutics (NZ) Ltd	GM Sheep	GM sheep for purpose of producing a biopharmaceutical (human alpha-1-antitrypsin, hAAT).	Ceased Operation
GMF99004	AgResearch	GM Sheep	GM sheep, with an inactivated myostatin gene, to increase the understanding of myostatin function in order to identify the effects on sheep muscularity.	Ceased Operation
GMF98005	Pioneer NZ Ltd	GM Maize	Import and field test GM maize modified for tolerance to glufosinate-ammonium herbicide, for breeding purposes, in Waikato.	Unused due to Company Closure
GMF98006	Pioneer NZ Ltd	GM Maize	Import and field test GM maize modified to contain Cry1A(b) protein from Bacillus thuringiensis to confer resistance to lepidopteran insects, for breeding purposes, in Waikato.	Unused due to Company Closure

